Message

From: Schmit, Ayn [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2B2F896DF44140F698592CEA68347CDA-SCHMIT, AYN]
Sent: 1/24/2020 4:40:25 PM
To: Kelly, Myla [MKelly2@mt.gov]
CC: Gildea, Jason [Gildea.Jason@epa.gov]; McGrath, Patricia [mcgrath.patricia@epa.gov]
Subject: US expert review of Saturated Rock Fills
Attachments: image003.emz

Hey, Myla- I wanted to touch base on the effort to identify US experts to review Teck's proposed SRF water treatment technology. We have identified 2 federal experts- Barb Butler from EPA's Office of Research and Development and Bob Seal from the USGS in Reston. We had an initial call with them yesterday to discuss the review process. We agreed that they would go ahead and review the limited publicly available information (described below). EPA's letter to BC requesting more detailed information to support a US review should get signed and sent out next week, and hopefully we'll know soon what they are willing to provide. I am hoping that you have had some success in identifying a MT reviewer that could be part of that team. If MT is able to provide an additional reviewer, we have scheduled a call with the group for Feb 18 and it would be great if that person were able to join the review. Let me know where that stands. Thanks, and I'll make sure you get a copy of the EPA letter once it is signed by all 3 officials.
Ayn

From: Bawa Meera VANM <Meera.Bawa@teck.com>
Sent: Thursday, December 19, 2019 11:04 AM
To: Gildea, Jason <Gildea.Jason@epa.gov>
Cc: Schmit, Ayn <Schmit.Ayn@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Hill, Douglas J ENV:EX <Doug.Hill@gov.bc.ca>; Naftz, David <dlnaftz@usgs.gov>; Fraser Carla SPO <Carla.Fraser@teck.com>; Steeves Dale VANM <Dale.Steeves@teck.com>; Milligan Nic SPO <Nic.Milligan@teck.com>; Myla Kelly <mkelly2@mt.gov>
Subject: RE: SRFs - additional presentation

Hi again Jason,

Further to the email below, I wanted to pass on this link http://bc-mlard.ca/files/presentations/2019-23-KLEIN-ETAL-removing-selenium-nitrate-saturated-fill.pdf to a presentation delivered just a few weeks ago at the MEND annual workshop (http://bc-mlard.ca/about). The presentation includes the story of the SRF as well as data on performance. Slide 22 includes the list of institutional members of the expert advisory group which includes Montana State University .

Internally we've also been discussing dates for a tour of Elk Valley mines given the interest and participation of MRC members in November. Looking ahead to 2020 and the MRC calendar, we are holding the dates of June 2, 4, 9, and/or 11, 2020 which we hope to confirm once the Chairs have finalized the date for the proposed meeting. If an in-person meeting is not held we hope these dates, or alternates can be confirmed early in the new year to allow time for government approvals and other arrangements.

Once again, happy holidays and see you in 2020!

Meera

From: Bawa Meera VANM
Sent: Wednesday, December 04, 2019 1:52 PM
To: 'Gildea, Jason' <Gildea.Jason@epa.gov>
Cc: Schmit, Ayn <Schmit.Ayn@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Hill, Douglas J ENV:EX

<Doug.Hill@gov.bc.ca>; Naftz, David <dlnaftz@usgs.gov>; Fraser Carla SPO <Carla.Fraser@teck.com>
Subject: RE: SRFs

Hi Jason,

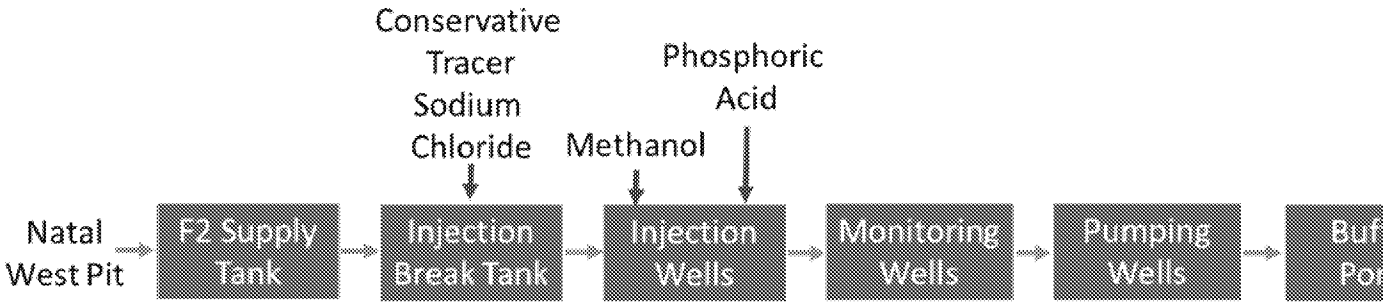
Thanks for this. It's great to know of the interest in the SRFs. As you note, the IPA does have some information. There is also information on SRFs available on our website, which admittedly is not always easy to locate.

This video explains the SRF and includes footage of the actual SRF: https://www.youtube.com/watch?v=6Dfd1QtO2Ng

This second video provides an illustration of the process including water volume treated: https://www.youtube.com/watch?v=ER39Fs91yyM#action=share

The below is a more technical explanation of the process together with the flowchart of the treatment:

Teck has been investigating saturated rock fills (SRF) as an alternative treatment option in the Elk Valley since 2012. The intent of the SRF is to create a microbial reducing environment which converts nitrate to N_2 and selenate (SeO_4) to selenite (SeO_3), similar to what occurs in the AWTF. To create a reducing environment, a carbon source is added to act as an electron donor. The nitrate and selenate are then used to support anaerobic respiration, instead of oxygen, and an electron is transferred from the carbon to the nitrate or selenate which produces reduced forms.



The treatment process involves submerging waste rock with water in a mined out pit. Water and carbon are injected to the pit and a hydraulic gradient within the waste rock is created from the injection location to the pumping wells. At the exit location, water is pumped out of the SRF to a buffer pond before it is discharged to the environment. An overview of

Figure 1 Saturated rock fill treatment process

the treatment train is in Figure 3.

In 2016, Teck initiated a pilot SRF test at 500 m^3/d at the Elkview mine F2 pit. The pilot test was successful and Teck initiated a full-scale SRF trial in 2016 which has been operational since January 2018. Water is injected into the pit at up to 10,000 m^3/d and methanol is added as a carbon source. Water is pumped out of the SRF at the same rate. Monitoring over the past 21 months has showed greater than 95% removal of nitrate and selenium.

I hope this satiates the interests in SRFs.

Happy Holidays to you all if we don't speak before then!

Meera

From: Gildea, Jason <Gildea.Jason@epa.gov>
Sent: Wednesday, December 04, 2019 9:25 AM
To: Bawa Meera VANM <Meera.Bawa@teck.com>; Fraser Carla SPO <Carla.Fraser@teck.com>

Cc: Schmit, Ayn <Schmit.Ayn@epa.gov>; McGrath, Patricia <mcgrath.patricia@epa.gov>; Hill, Douglas J ENV:EX <Doug.Hill@gov.bc.ca>; Naftz, David <dlnaftz@usgs.gov>
Subject: SRFs

[External email]

Hi Meera and Carla,

We've received a number of questions about the current and proposed SRFs for the Elk River valley. Do you have a paper or presentation that you can share that provides more detail? I.e., describes the chemistry, proposed processes, tests results, etc.? I realize that some of this is in the 2019 IPA, Annex J, but we would like to see a more detailed report, if possible.

Thanks!
Jason

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